

Helpful Hints for the Preparation of Select Tc-99m Radiopharmaceuticals

- The desired number of particles for a lung perfusion study with MAA is 200,000 to 700,000 particles. Each vial contains 3.5 to 6.5 million particles, so the number of particles must be reduced by about 90 percent in order to prepare a unit dose of MAA. The easiest way to accomplish this is to add a volume of sodium chloride to reconstitute the particles (10 mL), then withdraw 90 percent of the volume (9 mL) and discard it. This leaves 350,000 to 650,000 particles remaining in the vial that may be labeled with enough Tc-99m Pertechnetate for one patient dose. A reduced number of particles is necessary for pediatric patients and patients with certain lung disorders including pulmonary hypertension.
- MAA, following reconstitution, is a suspension of particles. Before withdrawing a dose from the vial the particles must be resuspended. The particles in a unit dose may also need to be resuspended if allowed to settle for a length of time.
- Both Choletec and MAA have a tendency to foam when a volume of liquid is added to the vial. This can make it difficult to draw the final patient dose. To minimize foaming, try adding volume slowly and down the inside of the vial.
- Conserve Bulk Pertechnetate by adding no more than 25% more than the activity you need to draw the final patient dose. For example, add no more than 38 mCi to a DTPA kit for a 30-mCi dose.
- Maintain negative pressure when working with radioactive materials in vials. After adding volume to the vial it is important to remove an equal or greater quantity of air from the vial. When the needle is removed from the vial, the pressure inside will be the same or less than the initial pressure. If the air is not removed, the excess pressure in the vial will expel any liquid that is near the top of the vial. Of course, this would contaminate the work area with radioactivity.
- Always use sodium chloride that is preservative free. Preservatives or oxidants will oxidize pertechnetate and reduce labeling.

The following table summarizes the manufacturer's recommendation for the preparation of Tc-99m Radiopharmaceuticals that are commonly prepared in the nuclear medicine department.

Guidelines for the Preparation of Select Tc-99m Radiopharmaceuticals

Product	Generic Name	Activity Limits	Volume	Storage	Expiration	Comments
DTPA	Pentetate	up to 500 mCi	2-10 mL	2-25°C	12 hours	Allow 15 minutes for labeling
MAA	Albumin Aggregated	20-50 mCi	2-8 mL	2-8°C	6 hours	Resuspend particles before drawing dose
HDP	Oxidronate	up to 300 mCi	3-6 mL	2-25°C	8 hours	
MDP	Medronate	up to 500 mCi	2-10 mL	2-30°C	6 hours	
Choletec	Mebrofenin	up to 100 mCi	1-5 mL	15-30°C	18 hours	Allow 15 minutes for labeling